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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,186

10/06/2005

Chandler H. McIver

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EXAMINER .

NGO, HUNG V

ART UNIT

PAPER NUMBER

2831

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/552,186

Applicant(s)

MCIVER, CHANDLER H.

Examiner

Hung V. Ngo

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-5 and 8-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-5, 8-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8, 9, 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Song et al.

Song et al discloses

(a) a molding compound (26) encapsulating discrete semiconductor devices comprising one of a solder contact bump small outline integrated circuit and a solder contact bump small outline transistor to form a package having a top, bottom and four side surfaces (Fig 4);

(b) a pair of L-shaped electrical contacts (22) each contacting a solder contact bump and extending to and flush with two of said surfaces (Fig 4);

(c) each of said electrical contacts providing an exposed contact surface coplanar with each of said two package surfaces and terminating at a junction between said two package surfaces (Fig 4); and

(d) the termination of said contacts occurring only at oppositely disposed package surfaces (Fig 4).

Re claim 9, wherein said discrete semiconductor device (21) is mounted between two vertically extending legs of opposing L-shaped electrical conductors.

Re claim 10, Song et al disclose a small outline leadless package comprising:

- (a) a molding compound (26) encapsulating discrete semiconductor devices comprising one of a solder contact bump small outline integrated circuit and a solder contact bump small outline transistor to form a package having a top, bottom, and four side surfaces (Fig 4);
- (b) a pair of electrical contacts (22) each contacting a solder contact bump and extending to and flush with one of said surfaces;
- (c) each of said electrical contacts providing an exposed contact surface co-planar with said one of said surfaces and terminating at a junction between said one of said surfaces and another of said surfaces (Fig 4), each of said exposed contact surfaces shaped to identify an electrical function of the encapsulated device (Fig 4); and
- (d) the termination of said contacts occurring only at oppositely disposed package surfaces (Fig 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al (US 5,770,888) in view of Fan et al (US 6,400,004).

Song et al disclose

a) a molding compound (26) encapsulating discrete

semiconductor devices comprising one of a solder contact bump (8) small outline integrated circuit and a solder contact bump small outline transistor to form a package having a top, bottom and four side surfaces (Fig 4);

(b) a pair of electrical contacts (22) each contacting a solder contact bump (25) and extending to and flush one of said surfaces (Fig 4);

(c) each of said electrical contacts providing an exposed contact surface coplanar with said one of said surfaces and terminating at a junction between said one of said surfaces and another of said surfaces (Fig 4);.

(d) the termination of said contacts occurring only at oppositely disposed package surfaces (Fig 4).

Re claim 4 wherein the exposed contact surface of said electrical contacts is shaped to identify the electrical function of the encapsulated device (Fig 4).

Re claim 5, wherein one of said electrical contacts is S-shaped for contacting solder bumps on a surface of said discrete semiconductor device and wherein a second electrical contact is planar and contacts solder contact bumps on an opposite side of said discrete semiconductor device (Fig 4).

The teaching as discussed above does not disclose each having longitudinally extending notches (6a) to provide mechanical attachment to the molding compound.

Fan et al disclose each electrical contact (340) having longitudinally extending notches (340a, 340d) to provide mechanical interlock to strengthen between the contact 340 the molding compound (360) (col. 4, lines 20-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the notches

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with the electrical contacts of Song et al to provide mechanical interlock to strengthen between the contact the molding compound.

Response to Arguments

Applicant's arguments with respect to claim 3, 8 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung V. Ngo whose telephone number is (571) 272-1979. The examiner can normally be reached on Monday to Thursday 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571) 272-2800 EXT 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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HVN

04-09-07

Hung V Ngo

HUNG V. NGO
PRIMARY EXAMINER